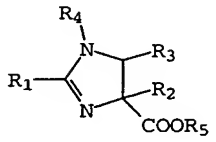
I CLAIM:

-1-

An imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members with O, N, S or combinations thereof, and heterocyclic containing 5 to 12 ring members with O, N, S; and R_5 a group which provides the ester of the imidazoline.

-2-

The imidazoline of Claim 1 wherein R_1 is phenyl.

-3-

The imidazoline of Claim 1 wherein R_4 is benzyl.

-4-

The imidazoline of Claim 1 wherein R_5 is lower alkyl containing 1 to 4 carbon atoms.

-5-

The imidazoline of Claim 4 wherein R_5 is ethyl.

-6-

The imidazoline of Claim 1 wherein R_2 is lower alkyl containing 1 to 4 carbon atoms.

-7-

The imidazoline of Claim 6 wherein R_2 is methyl.

-8-

The imidazoline of Claim 1 wherein R_3 is selected from the group consisting of phenyl and substituted phenyl.

-9-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is phenyl, and R_4 is benzyl.

-10-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is 4-methoxyphenyl, and R_4 is benzyl.

-11-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is phenyl, and R_4 is 4-fluorophenyl.

-12-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is phenyl, R_3 is phenyl, and R_4 is benzyl.

-13-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is 1*H*-indol-3-ylmethyl, R_3 is phenyl, and R_4 is benzyl.

-14-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is pyridin-4-yl, and R_4 is benzyl.

-15-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is phenyl, and R_4 is H.

-16-

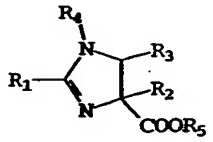
The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is ethoxycarbonyl, and R_4 is H.

-17-

The imidazoline of Claim 1 wherein R_1 is phenyl, R_2 is methyl, R_3 is pyridin-4-yl, and R_4 is benzyl.

-18-

An imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members with O, N, S or combinations thereof, and heterocyclic containing 5 to 12 ring members with O, N or S or combinations thereof; and R_5 a group which provides the ester of the imidazoline; and R_5 is an ester group containing 1 to 15 carbon atoms which are alkyl, cycloalkyl, aryl, heteroaryl comprising O, N or S or combinations thereof and heterocyclic comprising O, N, S or combinations thereof and wherein the carbon atoms are optionally substituted with a halogen.

-19-

The imidazoline of Claim 18 wherein R_1 and R_3 are phenyl, R_4 is lower alkyl containing 1 to 4 carbon atoms and R_4 is benzyl.

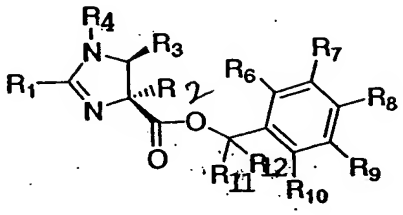
-20-

The imidazoline of Claim 19 wherein R_5 is a benzyl group.

-21-

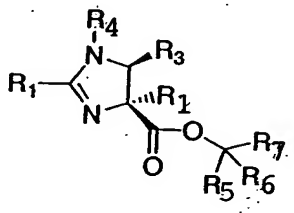
The imidazoline of claim 19 wherein R_5 is 1-phenyl-ethyl.

An imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members with O, N, S or combinations thereof, and heterocyclic containing 5 to 12 ring members with O, N or S or combinations thereof; and wherein in the ester group R_{11} and R_{12} are selected from the group consisting of a hydrogen, alkyl, aryl, arylalkyl and a halogen, and R_6 to R_{10} are selected from the group consisting of hydrogen, halogen, alkyl halide, ether, cyclic ether, cyclic alkyl, aryl or acyl, amine, hydroxyl and heterocyclic or heteroaryl rings with O, N or S or combinations thereof comprising 5 to 14 carbon atoms.

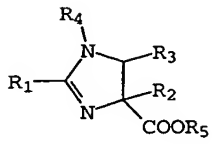
The present invention relates to an imidazoline of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members with O, N, S or combinations thereof, and heterocyclic containing 5 to 12 ring members with O, N or S or combinations thereof; and R_5 is a group which provides the ester of the imidazoline, wherein R_5 and R_6 are selected from the group consisting of hydrogen, alkyl, aryl, arylalkyl and halogen and wherein R_7 is selected from the group consisting of aryl and heterocyclic group containing one or more N, S, or O or combinations thereof comprising 5 to 14 carbon atoms.

-24-

A method for inhibiting inflammation in a mammal which comprises administering an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and R_5 is a group which provides the ester, all of which are optionally substituted, to the mammal in an amount sufficient to inhibit the inflammation.

-25-

The method of Claim 24 wherein the mammal is human.

-26-

The method of Claim 24 wherein the mammal is a lower mammal.

-27-

The method of any one of Claims 24, 23 or 24 wherein the administration is orally to the mammal.

-28-

The method of any one of Claims 24, 25 or 26 wherein the administration is topically to the mammal.

-29-

The method of any one of Claims 24, 25 or 26 wherein the administration is by injection into the mammal.

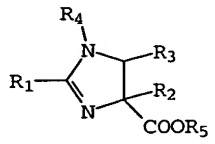
-30-

The method of any one of Claims 24, 25 or 26 wherein the administration is intravenous into the mammal.

-31-

A method for inhibiting a microorganism which comprises:

administering an effective amount of an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and R_5 is a group which provides the ester, all of which are optionally substituted, to inhibit the microorganism.

-32-

The method of Claim 31 wherein the inhibition is *in vitro*.

-33-

The method of Claim 31 wherein the inflammation is *in vivo*.

-34-

The method of Claim 31 wherein the administration is to a mammal.

-35-

The method of Claim 34 wherein the mammal is human.

-36-

The method of any one of Claims 31, 32 or 33 wherein the administration is orally to a mammal.

-37-

The method of any one of Claims 31, 32 or 33 wherein the administration is by injection into a mammal.

-38-

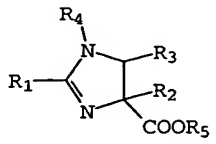
The method of any one of Claims 31, 32 or 33 wherein the administration is intravenously into a mammal.

-39-

The method of any one of Claims 31, 32 or 33 wherein the administration is topically to a mammal.

-40-

A method of inhibiting degradation of a protein which is NF-κB or NF-κB kinase which comprises contacting the protein with a imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and R_5 is a group which provides the ester, all of which are optionally substituted.

-41-

The method of Claim 40 wherein the inhibition is *in vivo*.

-42-

The method of Claim 40 wherein the inhibition is in the treatment of cancer.

-43-

A method for inhibiting inflammation in a mammal which comprises administering a multi-substituted 4-acid or 4-alkyl ester imidazoline to the mammal in an amount sufficient to inhibit the inflammation.

-44-

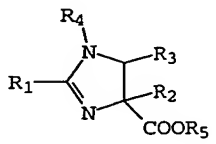
A method of inhibiting degradation of a protein which is NF-κB or NF-κB kinase which comprises contacting the protein with a multi-substituted imidazoline ester in an amount sufficient to inhibit degradation of the protein.

-45-

A method of inhibiting a cancer which comprises contacting the cancer with a multi-substituted imidazoline ester in an amount sufficient to inhibit the cancer.

-46-

A method for inhibiting a tumor or cancer in a mammal which comprises administering an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and R_5 is a group which provides the ester, all of which are optionally substituted, to the mammal in an amount sufficient to inhibit the tumor or cancer.

-47-

The method of Claim 46 wherein the mammal is human.

-48-

The method of Claim 46 wherein the mammal is a lower mammal.

-49-

The method of any one of Claims 46, 47 or 48 wherein the administration is orally to the mammal.

-50-

The method of any one of Claims 46, 47 or 48 wherein the administration is topically to the mammal.

-51-

The method of any one of Claims 46, 47 or 48 wherein the administration is by injection into the mammal.

-52-

The method of any one of Claims 46, 47 or 48 wherein the administration is intravenous into the mammal.

-53-

The method of Claim 46 wherein the imidazoline is admixed with a drug which inhibits growth of the tumor or cancer.

-54-

The method of Claim 46 wherein the drug is a platinate.

-55-

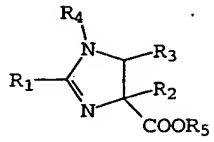
The method of Claim 46 wherein the drug is camptothecin.

-56-

The method of any one of Claims 46, 47 or 48.

-57-

A composition which comprises an imidazoline of the formula



wherein R_1, R_2, R_3 and R_4 are selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and R_5 is a group which provides the ester, all of which are optionally substituted; and

(b) a drug which inhibits growth of the tumor or cancer.

-58-

The composition of Claim 57 wherein the drug is a platinate.

-59-

The composition of Claim 57 wherein the drug is camptothecin.

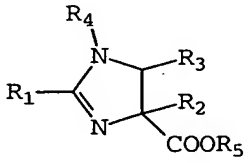
-60-

The composition of any one of Claims 57, 58 or 59 with a pharmaceutical carrier.

-61-

A method for inhibiting an immune response to a foreign NF-κB activator introduced into a mammal which comprises:

administering an effective amount of an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are each individually selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and, R_5 is a group which provides the ester, all of which are optionally substituted, to the mammal so as to thereby inhibit the immune response to the foreign NF-κB activator.

-62-

The method of Claim 61 wherein R_1 is phenyl.

-63-

The method of Claim 61 wherein R_4 is benzyl.

-64-

The method of Claim 61 wherein R_5 is lower alkyl containing 1 to 4 carbon atoms.

-65-

The method of Claim 61 wherein R_5 is ethyl.

-66-

The method of Claim 61 wherein R_2 is lower alkyl containing 1 to 4 carbon atoms.

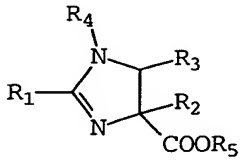
-67-

The method of Claim 61 wherein R_2 is methyl and R_3 is selected from the group consisting of phenyl and substituted phenyl.

-68-

A method for treating an autoimmune disease in a mammal without bringing on complete immunodeficiency in the mammal which comprises:

administering an effective amount of an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are each individually selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and, R_5 is a group which provides the ester, all of which are optionally substituted, to the mammal so as to treat the autoimmune disease.

-69-

The method of Claim 68 wherein R_1 is phenyl.

-70-

The method of Claim 68 wherein R_4 is benzyl.

-71-

The method of Claim 68 wherein R_5 is lower alkyl containing 1 to 4 carbon atoms.

-72-

The method of Claim 68 wherein R_5 is ethyl.

-73-

The method of Claim 68 wherein R_2 is lower alkyl containing 1 to 4 carbon atoms.

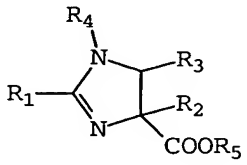
-74-

The method of Claim 68 wherein R_2 is methyl and R_3 is selected from the group consisting of phenyl and substituted phenyl.

-75-

A method for inhibiting rejection of an organ transplanted into a mammal which comprises:

administering an effective amount of an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are each individually selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and, R_5 is a group which provides the ester, all of which are optionally substituted, to the mammal so as to inhibit rejection of the organ transplanted into the mammal.

-76-

The method of Claim 75 wherein R_1 is phenyl.

-77-

The method of Claim 75 wherein R_4 is benzyl.

-78-

The method of Claim 75 wherein R_5 is lower alkyl containing 1 to 4 carbon atoms.

-79-

The method of Claim 75 wherein R_5 is ethyl.

-80-

The method of Claim 75 wherein R_2 is lower alkyl containing 1 to 4 carbon atoms.

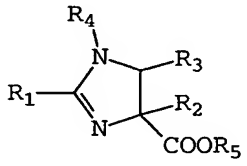
-81-

The method of Claim 75 wherein R_2 is methyl and R_3 is selected from the group consisting of phenyl and substituted phenyl.

-82-

A method for inhibiting reactivation of human immunodeficiency virus (HIV) in cells latently infected with the HIV which comprises:

administering an effective amount of an imidazoline ester of the formula:



wherein R_1, R_2, R_3 and R_4 are each individually selected from the group consisting of alkyl, acyl, aryl, arylalkyl, heteroaryl containing 5 to 14 ring members, and heterocyclic containing 5 to 12 ring members; and, R_5 is a group which provides the ester, all of which are optionally substituted, to inhibit the reactivation of the HIV in the latently infected cells.

-83-

The method of Claim 82 wherein R_1 is phenyl.

-84-

The method of Claim 82 wherein R_4 is benzyl.

-85-

The method of Claim 82 wherein R_5 is lower alkyl containing 1 to 4 carbon atoms.

-86-

The method of Claim 82 wherein R_5 is ethyl.

-87-

The method of Claim 82 wherein R_2 is lower alkyl containing 1 to 4 carbon atoms.

-88-

The method of Claim 82 wherein R_2 is methyl and R_3 is selected from the group consisting of phenyl and substituted phenyl.

-89-

The method of Claim 46 wherein the drug is a toposiomerase II inhibitor.

-90-

The method of Claim 89 wherein the drug is daunomycin.